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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,329	12/16/2003	Harue Nakashima	740756-2685	3698
22204	7590	07/02/2007	EXAMINER	
NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128			LIN, JAMES	
			ART UNIT	PAPER NUMBER
			1762	
			MAIL DATE	DELIVERY MODE
			07/02/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/736,329	NAKASHIMA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jimmy Lin	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 19,21,22 and 24-31 is/are pending in the application.
- 4a) Of the above claim(s) 24,25 and 27-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 19,21,22,26,30 and 31 is/are rejected.
- 7) ☒ Claim(s) 29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                        |                                                                   |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/10/07</u> .                                                 | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/10/2007 has been entered.

### ***Election/Restrictions***

2. Newly submitted claim 29 is directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the claim only depends from claims that have been withdrawn from consideration

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 29 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

### ***Claim Objections***

3. Claim 29 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. If the claim were to be rejoined, the claim would fail to further limit parent claim 19.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 19, 21-22, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Shuang (CN2443576Y, as provided by Applicant). JP 5-9470 (hereafter, '470) is provided as evidence.

Shuang discloses a method of forming an organic electron transport material formed between an anode and a cathode. The electron transport layer is formed via simultaneous evaporation (i.e., co-depositing) of an organic material and a metal salt (numbered paragraphs (1)-(5) on pg. 15-16). Shuang teaches that the organic material can be one of the compounds taught in '470 such as, e.g., compounds 20, 22, and 24 (see paragraphs [0037], [0043], and [0051], respectively, of '470). Shuang teaches that the metal salt can be a metal alkoxide (1<sup>st</sup> full paragraph of pg. 11).

#### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 30-31 (claim 30 as dependant from 26) are rejected under 35 U.S.C. 103(a) as being unpatentable over Shuang '576 in view of Kido et al. (U.S. Patent No. 6,589,673).

Shuang is discussed above, but does not explicitly teach that the metal salt includes one of zinc, aluminum, silicon, gallium, and zirconium. However, Shuang does teach the need for an electron transport layer doped with a metal salt between the electron excitation electrode and the light emitting layer to reduce the driving voltage. Accordingly, Kido teaches that an organic compound doped with a Lewis acid, such as aluminum chloride, can reduce an energy barrier during the electron injection from the anode electrode to the organic compound layer (col. 11, line 25-col. 12, line 15; Fig. 7). Because the doping of the organic layer of Kido provides the same effect as that of Shuang, it would have been obvious to one of ordinary skill in the art at the time of invention to have used aluminum chloride as the particular metal-salt dopant of Shuang

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with a reasonable expectation of success. Substitution of equivalents requires no express motivation (see MPEP 2144.06).

8. Claims 19, 21-22, 26, and 30-31 (claim 30 as dependant from 26) are rejected under 35 U.S.C. 103(a) as being unpatentable over Heuer et al. (U.S. Patent 6,316,130) in view of WO 00/32719 (hereafter '719).

Heuer discloses a method of manufacturing a EL device comprising an anode, cathode, and an EL layer between wherein the EL layer comprises an organic compound (such as compound IIIF of column 16) and a metal salt, such as aluminum chloride (Example 1, 2). Heuer discloses supplying the organic compound and aluminum chloride are first processed in a reactor to form an organometallic complex.

Heuer does not explicitly disclose the elected species, however the organic compound is disclosed as having aryl substituent and Heuer even exemplifies aryl in formula B6 column 17. Therefore it would have been obvious to one of ordinary skill in the art to have selected the elected formula with a reasonable expectation of success because Heuer clearly discloses an organic compound encompassing the claimed compound.

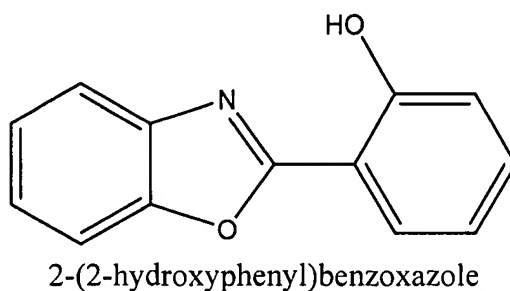
Heuer discloses forming the organometallic complex in solution prior to depositing on the substrate, but does not explicitly teach that the organic compound and the metal salt can be co-deposited over an anode or electrode. However, '719 discloses an improved method for forming a film of an organic metal complex by co-depositing the metal salt and the organic complex over the anode or electrode to form a organometallic complex (abstract; page 2; 2<sup>nd</sup> full paragraph on pg. 7). '719 teaches that the co-deposition method does not require multiple syntheses steps while forming an EL layer with improved performance (abstract; page 2). Therefore it would have been obvious to one of ordinary skill in the art to vaporize both the metal salt and the organic compound and deposit them simultaneously on the substrate to reap the benefits as taught by '719 with a reasonable expectation of success.

Claim 29-31: Heuer discloses aluminum chloride and gallium chloride as suitable metal salts (examples).

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9. Claims 19, 21-22 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 40-9328679 (hereafter '679) in view of WO 00/32719 (hereafter '719).

'679 discloses a method for manufacturing an EL device comprising an anode, a cathode, and an organic EL layer formed therebetween, wherein the EL material is made from 2-(2-hydroxyphenyl)benzoxazole and zinc acetate (abstract, [0031]). The 2-(2-hydroxyphenyl)benzoxazole contains a hydroxyl group and a azomethine group.



'679 does not explicitly teach that the organic material and the zinc acetate are co-deposited onto an anode or cathode. However, such is obvious over '719 for substantially the same reasons discussed above.

### *Response to Arguments*

10. Applicant's arguments filed 3/28/2007 have been fully considered but they are not persuasive.

Claim 19-23, 26, and 29-30 as rejected over Heuer '130 in view of '719:

The Applicant argues on pg. 8 that '719 does not suggest the co-deposition of a metal salt and an organic compound over the anode or the cathode. However, the Applicant is directed to the abstract, which teaches that an organo-metallic complex can be formed by simultaneous vaporization (i.e., co-deposition) of an organic complex and a metal salt. Additionally, the Applicant is directed to the 2<sup>nd</sup> full paragraph of page 7, which teaches that such a method of forming a film is useful for forming a layer of an electroluminescent compound over an electrode (i.e., an anode or a cathode). Therefore, '719 suggests the co-deposition of a metal salt and an organic compound over the anode or the cathode as claimed.

The Applicant argues on pg. 8-9 that the metal compounds disclosed by '719 are organo-metal complexes, which would be understood by a person of ordinary skill in the art to be different from metal salts such as a metal acetate salt, a metal halide and a metal alkoxide. However, the organo-metal complex as referred to in '719 is not a metal compound equivalent to the claimed metal salt. Rather, the organo-metal complex of '719 is the compound that is formed from vaporizing an organic complex and a metal compound, wherein the metal compound is the metal salt (see, e.g., pg. 2, lines 19-22).

Claims 19-23 as rejected over '679 in view of '719:

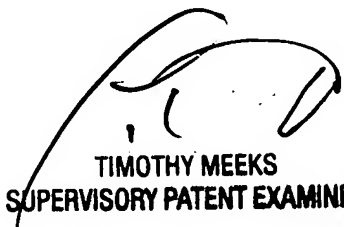
The Applicant argues on pg. 9 that '719 fails to suggest to co-deposit a metal salt and an organic compound over the anode or the cathode. However, '719 does provide such a suggestion, as discussed above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jimmy Lin whose telephone number is 571-272-8902. The examiner can normally be reached on Monday thru Friday 8AM - 5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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TIMOTHY MEEKS  
SUPERVISORY PATENT EXAMINER